

**Notice of Allowability**

Application No.

09/856,508

Examiner

Juan A. Torres

Applicant(s)

BOULANGER ET AL. 

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 03/02/2005.
2. ☒ The allowed claim(s) is/are 1-5.
3. ☒ The drawings filed on 02 March 2005 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                       |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance              |
|   | 9. <input type="checkbox"/> Other _____.  |

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Surinder Sachar on 4-13-2005 at 10:30 am.

The application has been amended as follows:

In line 12 of claim 1 the recitation "a method" is changed to "by a correction of the frequency shift method".

In line 2 of claim 4 the recitation "first and second channels" is changed to "first and second components".

In line 5 of claim 4 the recitation "first channel" is changed to "first component".

In line 8 of claim 4 the recitation "second channel" is changed to "second component".

In line 2 of claim 5 the recitation "first and second channels" is changed to "first and second components".

In line 5 of claim 5 the recitation "first channel" is changed to "first component".

In line 8 of claim 5 the recitation "second channel" is changed to "second component".

### **EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE**

Claims 1-5 are allowable over prior art.

The following is an examiner's statement of reasons for allowance: claim 1-5 are allowed because the references cited fail to teach, as applicant has, a method for receiving spectrum spreading signals with frequency shift correction, where a signal is received comprising a preamble made up of a sequence of known symbols spread in frequency by a pseudo-random sequence comprising N chips, followed by a sequence of information symbols spread in frequency by said pseudo-random sequence; a base band signal is formed from the received signal; a correlation is performed between the base band signal and the pseudo-random sequence at least in the portion of the signal corresponding to the information symbols in order to obtain a correlation signal; a demodulation of the correlation signal is performed in order to obtain a demodulation signal; the information symbols are restored; the method for the correction of the frequency shift comprises the steps of a) in a first step, the correlation signal is processed in the portion corresponding to the preamble, in order to estimate the modulation period affecting this signal because of the frequency shift and a correcting signal with this estimated period is elaborated; b) in a second step, the signal is corrected before or after correlation in the portion corresponding to the information symbols, by means of said correcting signal, this method is being further characterized in that: 1) the base band signal, is divided into two components, a first component and a second component in quadrature with the first and a correlation is performed on each of these components in order to obtain two correlation components  $CORR(I)$  and  $CORR(Q)$ ; 2) a DOT signal is calculated which is the sum of two direct products of successive samples of the correlation components, as well as a CROSS signal which is

the difference between two crossed products of successive samples of the correlation components; and 3) for estimating the period of the modulation, the ratio between a CROSS signal and a DOT signal is calculated at each symbol period, the arc for which the tangent is equal to this ratio is calculated, the inverse of this arc is calculated and multiplied by  $\pi N/2$ , as the applicant has claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kato et al. (US 5260969) disclose a first generating unit for generating a reference code, a second generating unit for generating a reference signal in synchronism with the reference code, a correlating unit for obtaining a correlation between a received signal and the reference code, and a decoding for decoding the received signal in accordance with the reference signal and a correlation output from the correlating unit. Mochizuki et al. (US 5856997) disclose a receiving apparatus that includes a base-band conversion circuit, a synchronizing circuit/code generator and a demodulator, the base-band conversion circuit converts a received signal into a base-band signal, the synchronizing circuit/code generator detects a spread code included in the received signal to generate a plurality of spread codes in synchronization with the spread code included in the received signal, and the demodulator uses the plurality of spread codes supplied by the synchronizing circuit/code generator to demodulate the

base-band signal. Chow et al. (US 4481640) disclose the use of double detection, which gets of the Doppler effect using suitable encoding. Sturza (US 4706286) use the frequency mixing principle in the radio portion of the receivers for detecting and identifying Doppler frequency and phase information contained within a signal of the direct sequence spread spectrum type; Bi (US 5623485) uses a channel encoder processes data sequences into sufficiently short encoded data blocks to minimize any phase shifts at a receiver in a high mobility environment due to a Doppler frequency shift.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres, Ph. D.  
04-13-2005

  
**MOHAMMED GHAYOUR**  
**SUPERVISORY PATENT EXAMINER**